TMH/DAG:lam 11/03/03
PATENT

Attorney Reference Number 4239-61302
Application Number 10/017,372

LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

2
1. **(Currently amended)** A functional TGF-β1 ~~family~~ fusion protein, comprising:

a functionalizing peptide tag of no more than about 100 amino acids for detecting, quantifying, or providing a specific additional function to the fusion protein; and

a mature TGF-β1 ~~family protein~~comprising residues 279-283 and 296-408 of SEQ ID NO: 37, or an amino acid sequence that has at least 95% sequence identity with ~~the mature TGF-β family protein~~ residues 279-283 and 296-408 of SEQ ID NO: 37 and which retains TGF-β1 ~~family protein~~ activity;

wherein the functionalizing peptide tag is inserted between a pair of adjacent residues between about ~~residues~~ positions 1 and 22 of the mature ~~portion of the~~ TGF-β1 ~~family protein~~;

and wherein the activity of the TGF-β1 fusion protein is reduced by no more than 50% as compared to the mature TGF-β1 ~~family protein~~.

3
2. **(Currently amended)** A functional TGF-β1 ~~family protein~~ dimer formed by the association of two of the fusion proteins of claim 1. 2

4
3. **(Original)** The dimer of claim ~~2~~, 3 wherein the dimer is a homodimer.

5
4. **(Currently amended)** The dimer of claim ~~2~~, 3 made by a process comprising:

expressing a nucleic acid molecule in a eukaryotic cell to produce a monomer fusion protein, wherein the nucleic acid molecule comprises:

a sequence encoding the functionalizing peptide tag;

a sequence encoding the mature TGF-β1 ~~family protein~~; and

a sequence encoding a pro-region (latency associated peptide) of the TGF-β1 ~~family protein~~, located to provide targeting and/or assembly and/or processing of the fusion protein encoded for by the nucleic acid.

6 5
~~5.~~ **(Original)** The dimer of claim ~~4~~, wherein the process further comprises:
associating two monomer fusion proteins to form the dimer.

7 5
~~6.~~ **(Currently amended)** The dimer of claim ~~4~~, wherein the sequence encoding the pro-region is located upstream to both the sequence encoding the functionalizing peptide tag and the sequence encoding the mature TGF-β1 ~~family protein~~.

8 5
~~7.~~ **(Original)** The dimer of claim ~~4~~, wherein the process further comprises:
cleaving the pro-region (latency associated peptide) from at least one fusion monomer.

9 5
~~8.~~ **(Original)** The dimer of claim ~~4~~, wherein the process further comprises:
cleaving the pro-region (latency associated peptide) from both fusion monomers.

10 2
~~9.~~ **(Currently amended)** The fusion protein of claim ~~1~~, wherein the functionalizing peptide tag is inserted downstream of residue five of the mature TGF-β1 ~~family protein~~.

10. **(Cancelled).**

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~~11.~~ **(Currently amended)** The fusion protein of claim ~~10~~1, where the protein comprises the amino acid sequence as in the mature portion of SEQ ID NO: 37.

12-17. **(Cancelled).**

12 2
~~18.~~ **(Currently amended)** The fusion protein of claim ~~1~~, further comprising a pro-region (latency associated peptide) of the TGF-β1 ~~family protein~~ located to provide targeting and/or assembly and/or processing of the fusion protein.

13 12
~~19.~~ **(Original)** The fusion protein of claim ~~18~~, wherein the pro-region is located at the N-terminal region of the fusion protein.

20-27. **(Cancelled)**

15 28. **(Previously presented)** The fusion protein of claim ~~1~~ 2, wherein the tag is an epitope tag, a purification tag, or an identification tag.

16 29. **(Previously presented)** The fusion protein of claim ~~1~~ 2, wherein the tag comprises a FLAG tag, a c-myc tag, a 6x His tag, a HA tag, a Tat tag, a T7 tag, a GFP peptide, or a GST peptide.

30. **(Cancelled).**

17 31. **(Currently amended)** ~~The~~ An isolated nucleic acid molecule encoding the fusion protein of claim ~~30~~1, comprising ~~a sequence comprising~~ residues 845-1234 of SEQ ID NO: 36.

18 32. **(Currently amended)** The isolated nucleic acid molecule of claim ~~30~~31 17, further comprising a sequence encoding a TGF-β pro-region.

19 33. **(Currently amended)** The isolated nucleic acid molecule of claim 32 18, comprising ~~a sequence comprising~~ SEQ ID NO: 36.

20 34. **(Currently amended)** A recombinant nucleic acid molecule comprising a promoter sequence operably linked to the isolated nucleic acid molecule according to claim ~~30~~31. 17

21 35. **(Currently amended)** An isolated transgenic cell comprising a recombinant nucleic acid molecule according to claim 34. 20

22 36. **(Original)** The transgenic cell of claim ~~35~~ 21, wherein the cell is a bacterial cell or an eukaryotic cell.

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23 22
~~37~~. **(Original)** The eukaryotic cell of claim ~~36~~, wherein the cell is a yeast cell or a mammalian cell.

38-57. **(Cancelled).**

1
~~58~~. **(Currently amended)** A TGF-β family fusion protein, comprising:

a N-terminal region consisting of an amino acid sequence of a pro-region (latency associated peptide) of a TGF-β1 ~~family protein~~,

a functionalizing peptide tag of no more than about 100 amino acids; and

an amino acid sequence consisting of the mature portion of the TGF-β1 ~~family protein~~;

wherein the functionalizing peptide tag is inserted between a pair of adjacent residues between about residues 1 and 22 of the mature portion of the TGF-β1 ~~family protein~~;

and wherein the portion of the fusion protein comprising the mature portion of the TGF-β1 ~~family protein~~ and the functionalized peptide tag has ~~a~~ TGF-β1 ~~family protein~~ activity that is reduced by no more than 50% as compared to the mature TGF-β1 ~~family protein~~ alone.

23 2
~~59~~. (New). An isolated nucleic acid molecule encoding the fusion protein of claim ~~1~~, comprising residues 835-1197 of SEQ ID NO: 8, SEQ ID NO: 10, residues 835-1197 of SEQ ID NO: 12, SEQ ID NO: 14, residues 845-1222 of SEQ ID NO: 32, residues 849-1226 of SEQ ID NO: 34, or residues 845-1234 of SEQ ID NO: 38.

14 12
~~60~~. (New). An isolated nucleic acid molecule encoding the fusion protein of claim ~~18~~, comprising SEQ ID NO: 8, 12, 32 or 38.

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~~61~~. (New) The fusion protein of claim ~~1~~, where the protein comprises the amino acid sequence as in the mature portion of SEQ ID NO: 9, 11, 13, 15, 33 or 39.